

**REMARKS**

Applicants thank the Examiner for the second complete examination of the instant application. Claims 1-3, 6, 9-15 and 17-36 are currently pending in the instant application. Claim 1 has been amended, and claims 4, 7, 8 and 16 have been canceled without prejudice or disclaimer of the subject matter contained therein. Claims 1 and 23 are independent. Reconsideration of this application, as amended, is respectfully requested.

**REJECTION UNDER 35 U.S.C. § 102(B)**

Claims 1, 7, 9, 17-18 and 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Buxbaum, U.S. Patent No. 4,274,030. Additionally, claims 1-4, 6, 8 and 36 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Frank et al., U.S. Patent No. 4,522,852. These rejections are respectfully traversed.

Amended independent claim 1 sets forth a combination of limitations including "a buffer located between said substrate and said emissive layer, said buffer inhibiting interaction of said emissive layer and said substrate by one of altering, and altering and blocking said substrate." For the following reasons, Applicants respectfully submit that the patents relied upon by the Examiner fail to teach or suggest at least this limitation of independent claim 1.

Figure 1 of the Buxbaum patent document illustrates an activator substrate (generally shown by reference numeral 1) held in a frame 4. In addition to the substrate 1, the frame 4 also holds a barrier layer 3 and a surface layer 2. The surface layer 2 is made of platinum metal and the barrier layer 3 is made of a diffusion-inhibiting material such as rhenium. (See column 3, lines 30-38.)

Although the Buxbaum patent does indeed teach a barrier layer 3, it is clear that this barrier layer 3 is incapable of inhibiting interaction of an emissive layer and a substrate “by way of one of altering, and altering and blocking said substrate.” (Emphasis added.) Furthermore, Buxbaum makes no suggestion that the barrier layer 3 would be capable of such functionality. Therefore for at least the above reasons, Applicants respectfully submit that Buxbaum may not be relied upon to reject independent claim 1.

Turning now to Frank et al., this patent is directed toward a thermionic cathode and a method of manufacturing the thermionic cathode. According to the disclosure of the patent, the thermionic cathode includes a fine-grained supporting layer that is formed on a substrate. Then, a layer, or series of layers, is formed on the fine-grained supporting layer. Finally, a coating layer is formed that is protected from grain growth and destruction. (See column 5, lines 39-52.)

Based on analysis of the patent, the above is the Applicants general understanding of the structure of the thermionic cathode according to Frank et al. However, the Examiner, on page 3 of current Office Action, indicates that Frank et al. teach “a thermionic cathode comprising a substrate, and emissive layer and a buffer layer inhibiting the interaction of the substrate and the emissive layer by blocking and altering.” Furthermore, the Examiner asserts that Frank et al. teach “using a buffer layer which is insoluble in the substrate layer so that the buffer forms a barrier layer (blocking) as well as inhibiting the grain-growth (altering).” Applicants have carefully scoured the Frank et al. patent document for the text “buffer layer” and “barrier layer,” but have been unable to find such disclosure. However, based on the reading of the relied upon patent document, it appears that the Examiner is construing the supporting layer as being similar

to the “buffer” of rejected independent claim 1. If this is incorrect, the Examiner is respectfully requested to clarify her rejection in response to this amendment.

In rejecting claim 1 in view of Frank et al., the Examiner relies on the text found in column 7, lines 45-68 and column 8, lines 1-21. This disclosure relates specifically to the formation and structural material of the supporting layer. The Examiner is respectfully requested to refer to column 7, lines 7-12, where it is indicated that the supporting layer may be formed in three manners. The specific text relied upon by the Examiner to reject independent claim 1 relates to the third method for forming the supporting layer. However, as it will be clear from the following discussion, the manner by which the supporting layer is formed in no way alters or alters and blocks the substrate.

The method for forming the supporting layer according to Frank et al. does not teach or suggest that there is any reaction thereof with the substrate. Actually, the substrate is not even mentioned in the specific portion that the Examiner relied upon. Instead, the disclosure relates to how the method for forming the layer reacts and adjusts the structure of the supporting layer. For example, the Examiner is encouraged to refer to column 7, lines 53-63, where Frank et al. teach that the supporting layer is modified during manufacturing such that the crystal growth thereof is inhibited. However, regardless of the type of alterations that the supporting layer undergoes, there is no teaching or suggestion in the relied upon patent document that approaches the indicated limitation of rejected claim independent claim 1. Therefore, for at least the above reasons, Applicants respectfully submit that Frank et al. may not be relied upon to reject independent claim 1.

With regard to the dependent claims, Applicants respectfully submit that the dependent claims are allowable at least due to their dependence upon an allowable independent claim.

In accordance to the above, Applicants respectfully request reconsideration and withdrawal of the claim rejections under 35 U.S.C. § 102(b).

**CLAIM REJECTION UNDER 35 U.S.C. § 103(A)**

Claims 14 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Buxbaum in view of Krijin, U.S. Patent No. 6,236,052. Additionally, claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Buxbaum in view of Frank et al. These rejections are respectfully traversed.

Foremost, Applicants respectfully submit that these rejected claims are allowable at least due to their dependence upon an allowable independent claim. Moreover, Applicants would like to point out that Krijin has a later filing date than that of the instant application. That is, the instant application was filed June 23, 1999, where was Krijin as filed September 9, 1999. Therefore, Krijin may not be relied upon by the Examiner to reject any claim set forth in the instant application.

Dependent claim 19 is patentable at least due to its dependence upon allowable independent claim 1. Moreover, dependent claim 19 is allowable in view of the deficiencies of Buxbaum and Frank et al., as discussed in detail hereinabove.

In view of the above comments, Applicants respectfully request reconsideration and withdrawal of the claim rejections under 35 U.S.C. § 103(a).

### **ALLOWABLE SUBJECT MATTER**

Applicants greatly appreciate the Examiners indication that claims 10-13 and 21-22 would be allowable if rewritten in independent form. However, at this time Applicants have not rewritten these claims in independent form as it is respectfully submitted that these claims are allowable at least due to their dependence upon and allowable independent claim.

### **CONCLUSION**

All of the stated grounds of rejection have been properly traversed, accommodated, and/or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite the prosecution of this application, the Examiner is invited to telephone Timothy R. Wyckoff (Reg. No. 46,175) at (703) 390-3030 in the Washington D.C. area.

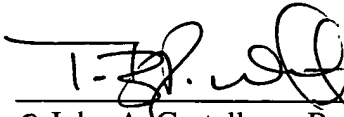
Prompt and favorable consideration of this Amendment is respectfully requested.

Serial No. **09/338,520**

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY & PIERCE, P.L.C

By:  #46,175  
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John A. Castellano, Reg. No. 35,094

JAC/TRW:tljw

P.O. Box 8910  
Reston, Virginia 20195  
(703) 390-3030

**Version To Show Changes Made**

**IN THE CLAIMS**

Claims 4, 7, 8 and 16 have been canceled without prejudice or disclaimer of the subject matter contained therein.

The following claim has been amended:

\ 2. (Twice Amended) A thermionic cathode, comprising:

a substrate;

an emissive layer; and

a buffer, located between said substrate and said emissive layer, said buffer inhibiting

interaction of said emissive layer and said substrate by way of one of altering, [blocking]

and altering and blocking said substrate.